FM 23-33

DEPARTMENT OF THE ARMY FIELD MANUAL

66-MM HIGH EXPLOSIVE ANTITANK ROCKET, M72



HEADQUARTERS, DEPARTMENT OF THE ARMY

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*This manual supersedes TC 23-7, 4 October 1962.

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CHAPTER 1
INTRODUCTION

Section I. GENERAL

1. Purpose and Scope

a. This manual guides soldiers in the use of the 66-mm high explosive antitank rocket, M72. It contains information covering the characteristics, nomenclature, functioning, and employment of the M72 system.

b. This manual is applicable to both nonnuclear and nuclear warfare.

c. Users of this manual are encouraged to submit recommended changes or comments which would improve the manual. Comments should be keyed to the specific page, paragraph, and line of the text to which the change is directed. Reasons should be provided for each recommended change to insure understanding and more complete evaluation. Comments are to be forwarded directly to the Commandant, United States Army Infantry School, Fort Benning, Ga.

2. General Characteristics

The 66-mm HEAT rocket, M72, is a lightweight, self-contained antitank system consisting of a 66-mm HEAT rocket packed within its own launcher (fig. 1). When issued, the launcher serves as a watertight packing container for the rocket; however, when the launcher is placed into the firing position it serves to ignite and guide the rocket on its initial flight toward the intended target (fig. 2). The launcher houses a percussion-type firing mechanism to activate the rocket. The rocket is fixed within the launcher and attached to it by means of an integral igniter. The rocket is a percussion ignited, fin stabilized, fixed munition (fig. 3).

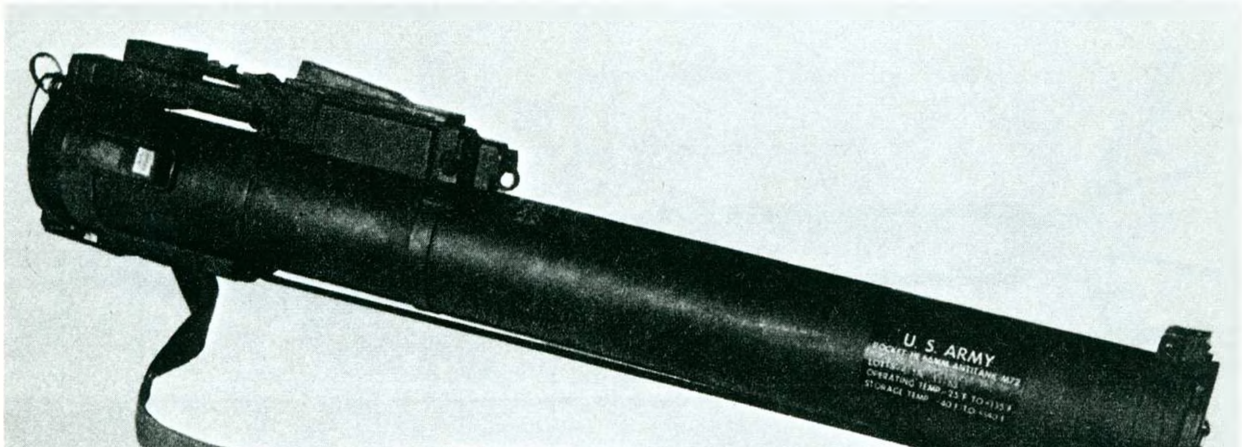


Figure 1. M72 in closed position.

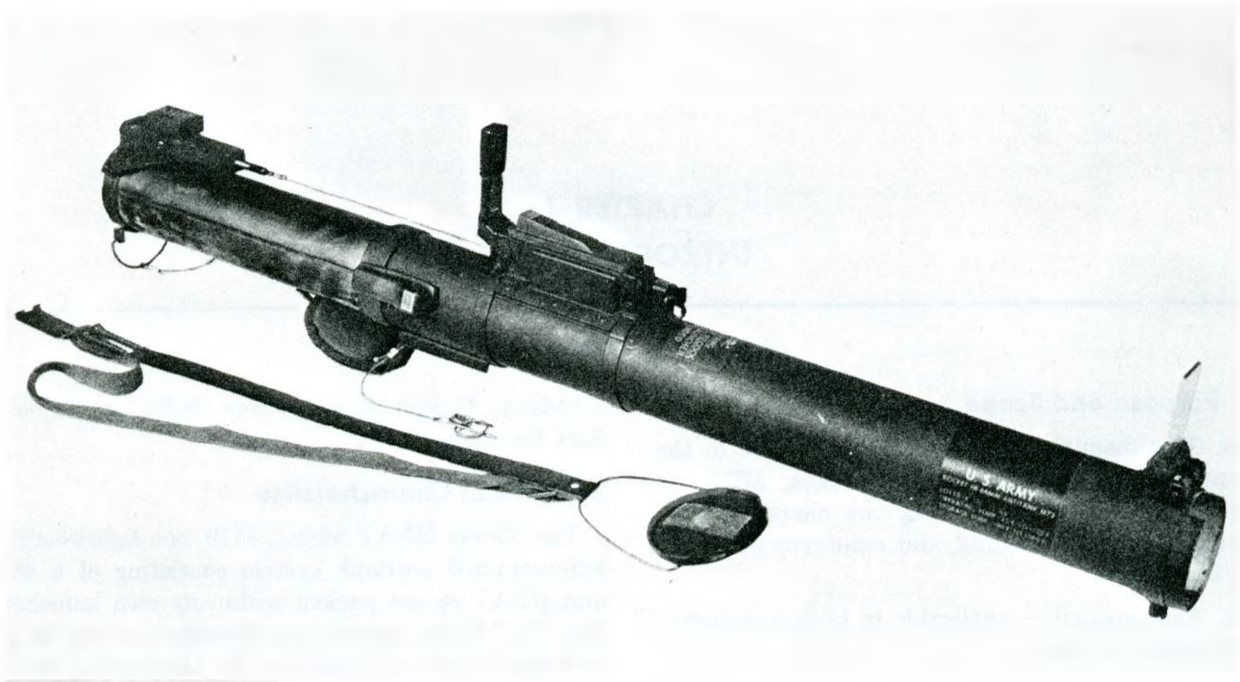


Figure 2. M72 in extended position.

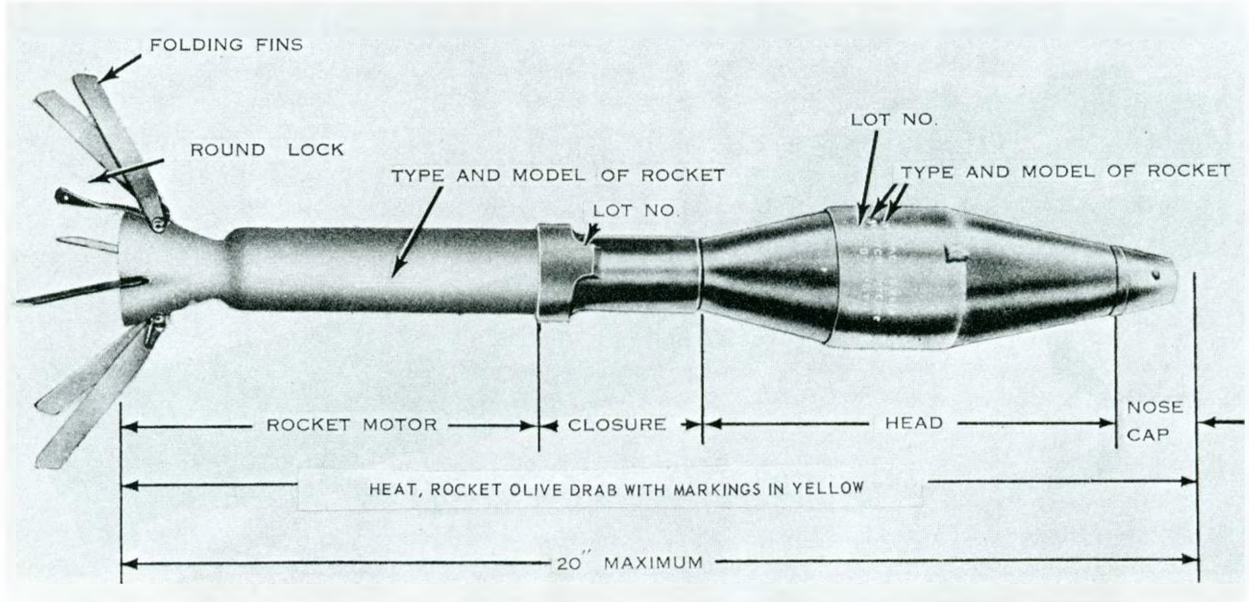


Figure 3. The 66-mm rocket.

Section II. DESCRIPTION AND DATA

3. Description

a. Launcher. The launcher (fig. 4) for the 66-mm HEAT rocket is composed of two concentric tubes. The outer tube is made of a high strength, plastic impregnated glass fiber and has the following parts affixed to it: The front sight is on the muzzle; the trigger assembly, trigger safety, recocking latch, rear sight, detent, and rear cover are affixed to the rear of the tube. The inner tube is constructed of aluminum; it will extend telescopically and lock into the firing position. This tube houses the firing pin spring, firing pin, safety pin, primer, and rear sight cover. The firing pin cable extends from the rear of the trigger assembly to the firing pin when the launcher is in the firing position. The rocket is positioned within the rear tube and is attached to it by the flash tube.

b. Rocket. The 66-mm HEAT rocket is made up of the 66-mm HEAT warhead M18, the point-initiating-base detonating fuze, M412, and the rocket motor, M54. Attached to the nozzle of the rocket motor are six spring loaded fins which are folded forward along the motor when the rocket is within the launcher. Once the rocket motor has been ignited, all of the propellant is burned before the rocket leaves the launcher. The rocket's momentum carries it to the target.

4. Tabulated Data

a. Launcher.

Length (firing position)	35 inches (approx).
Length (closed position)	25 inches (approx).
Weight (complete system)	4¾ pounds (approx).
Weight (launcher only)	2½ pounds (approx).
Firing mechanism	Percussion.
Sights:	
front	Reticle graduated in 25-meter range increments, 15 mile per hour lead.
rear	Peepsight with temperature adjustment.

b. Rocket.

Length	20 inches.
Weight	2¼ pounds (approx).
Muzzle velocity	475 feet per second at 70° F.
Maximum range	1,000 meters (approx).
Maximum effective range	200 meters (based on an average for both moving and stationary targets).

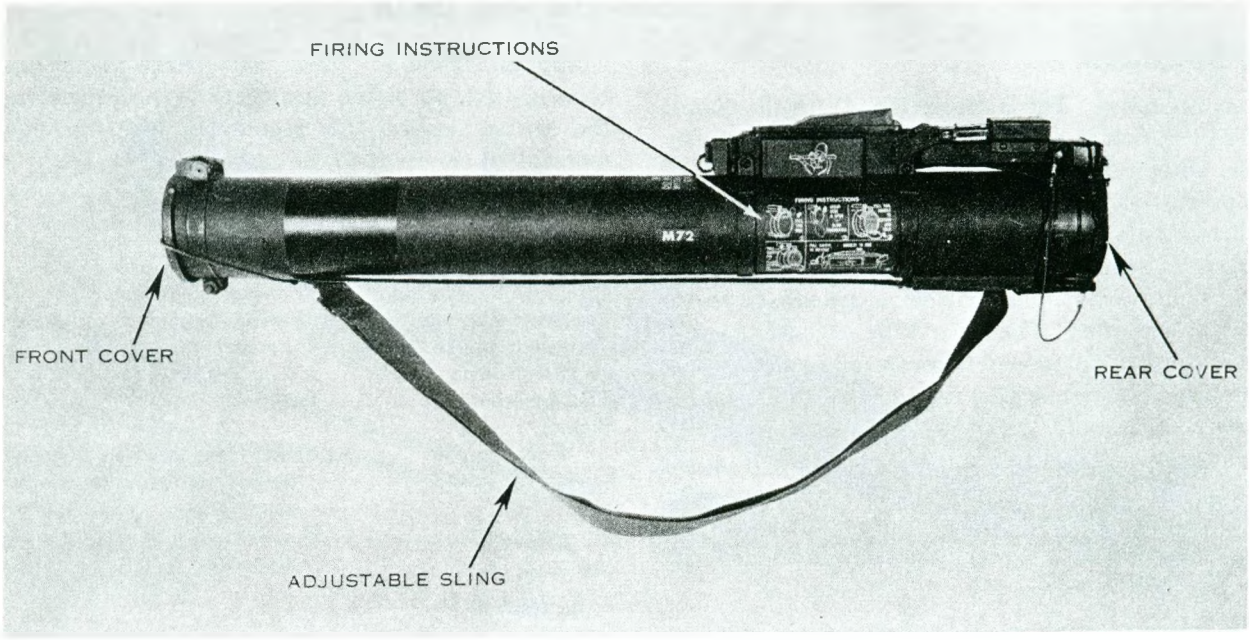


Figure 4. M72 launcher nomenclature.

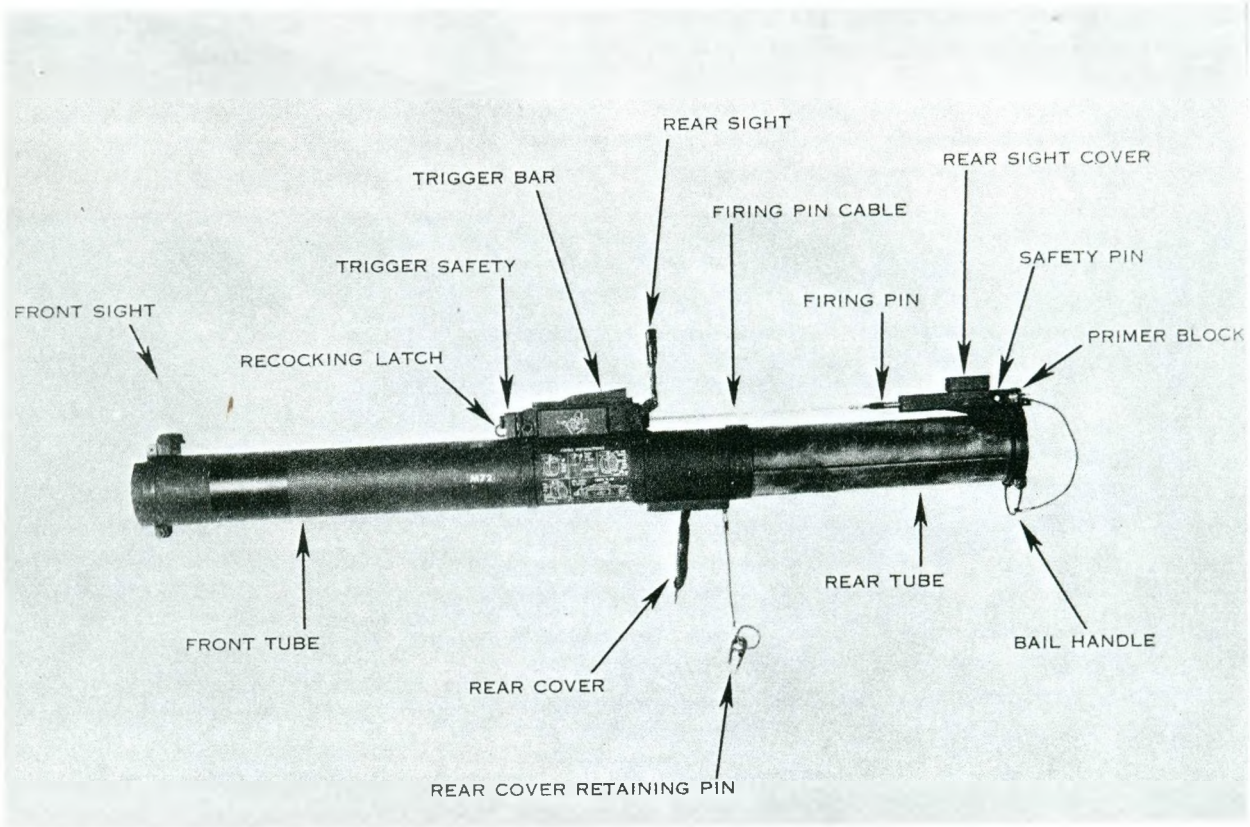


Figure 4.—Continued.

CHAPTER 2
LAUNCHER CONTROLS AND SIGHTING EQUIPMENT

Section I. CONTROLS

5. General

This section describes and illustrates the controls found on the M72.

6. Firing Mechanism

a. The trigger assembly is located on the top rear of the front or outer tube. The trigger is in the configuration of a bar which must be depressed to fire. When the trigger is depressed it will release the tension on the firing pin cable and allow the firing pin to strike the primer.

b. The firing pin housing is affixed to the top rearmost portion of the rear or inner tube. Closely associated with the housing is the firing pin, firing pin spring, primer block, primer, safety pin, and rear sight cover. The primer is located on line with the firing pin. The safety pin, when in place, intersects the line of travel of the firing pin and provides a positive barrier between the primer and the firing pin.

7. Trigger Safety and Recocking Latch

The trigger safety and the recocking latch are located on the front surface of the trigger assembly (fig. 5).

a. The trigger safety must be pushed forward to the release position before the trigger can be depressed. This safety should not be released until the launcher is in the correct firing position on the gunner's shoulder.

b. The recocking latch is used only when the launcher has failed to fire. The latch should not be actuated until the following precautions have been taken: the launcher should be retained on the gunner's shoulder for ten seconds; at the completion of the waiting period reset the trigger safety and remove the launcher from the shoulder; the safety pin must be replaced and an additional 60-second waiting period observed; the launcher is then partially collapsed. The gunner will then pull the recocking latch forward until a distinct click is heard (fig. 6), then the launcher is placed into the firing position again.

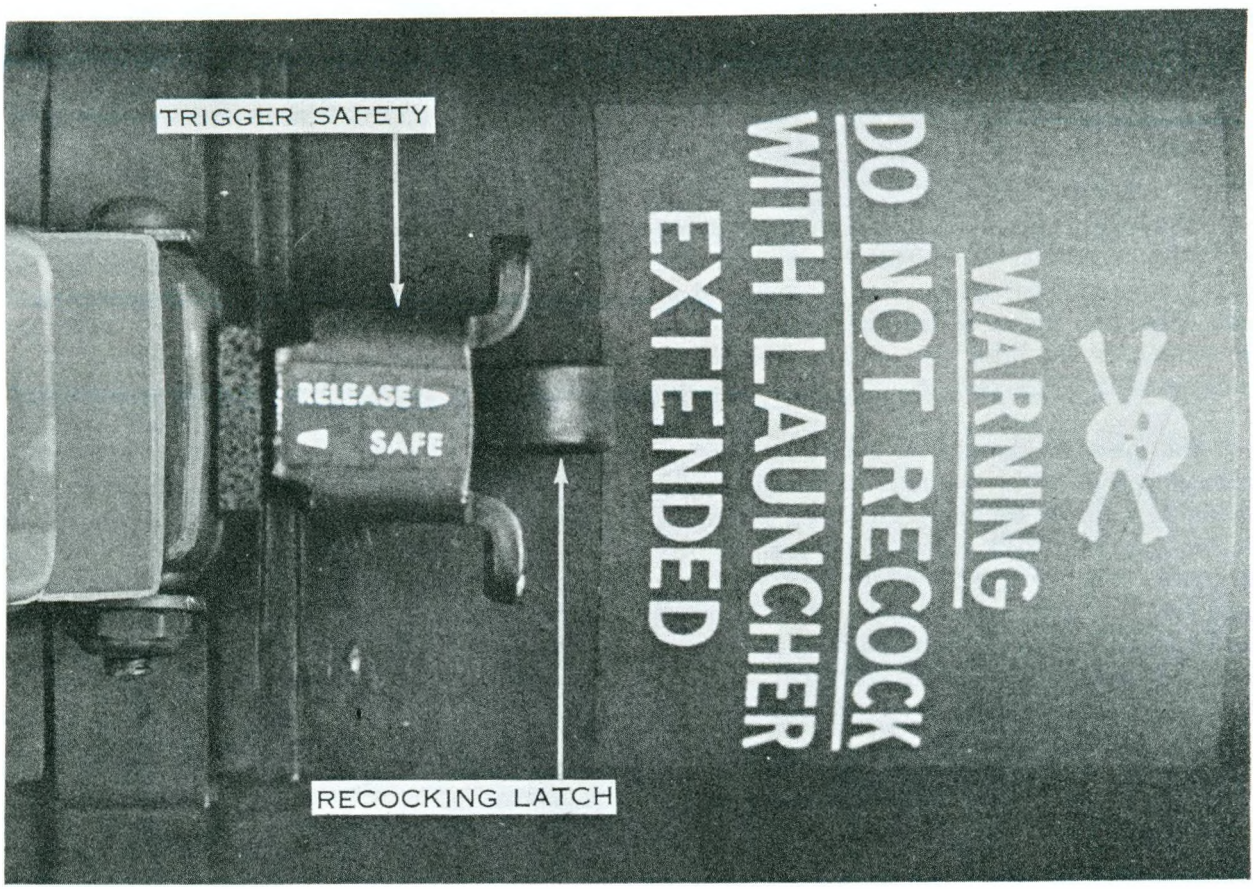


Figure 5. M72 trigger safety and recocking latch.

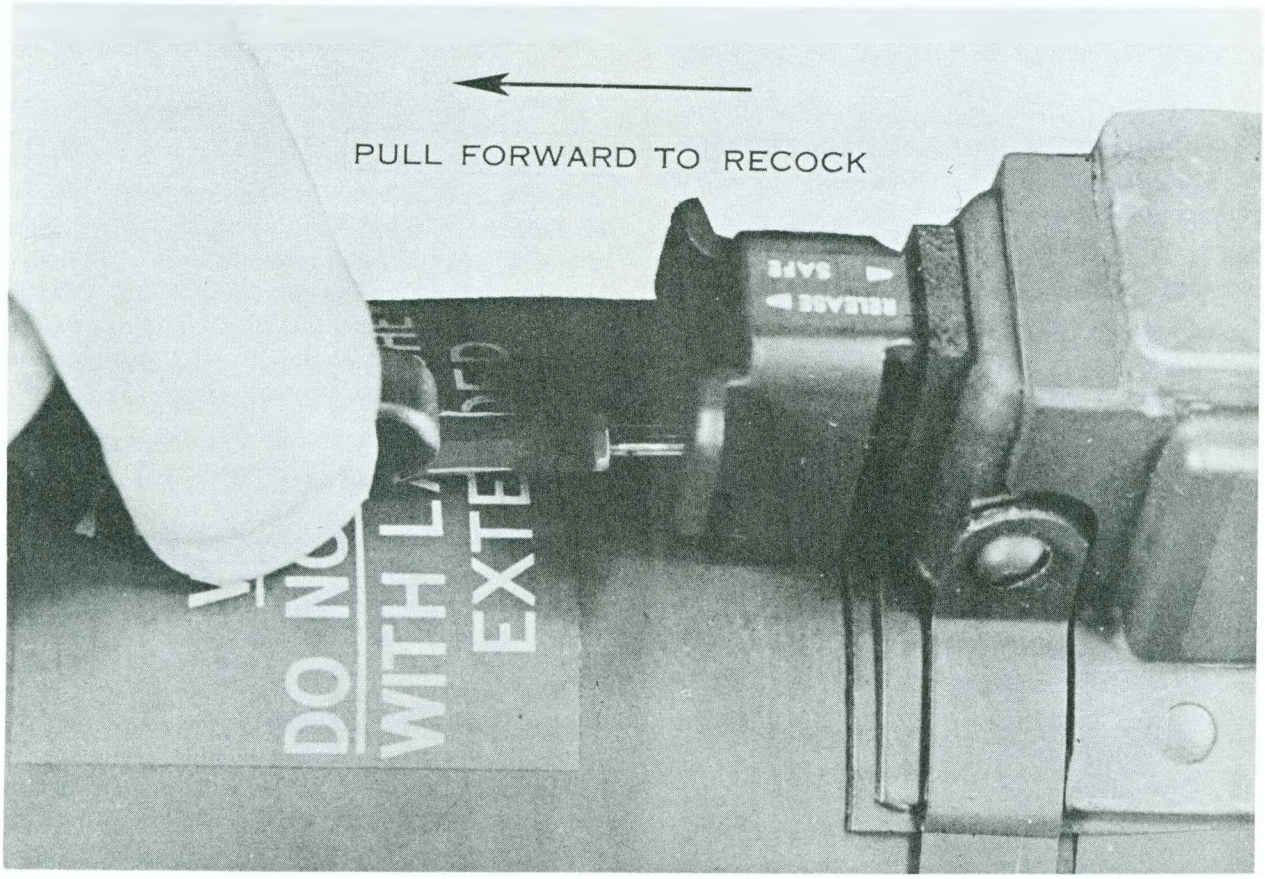


Figure 6. Recocking the M72.

Section II. SIGHTING EQUIPMENT

8. Front Sight

The front sight on the M72 (fig. 7) is made of clear plastic and has a sight reticle stamped upon it. The reticle has a vertical centerline that is graduated in 25-meter increments from 100 to 325 meters. On either side of the vertical centerline are 15 mile per hour lead marks which appear at the following ranges: 100, 150, 200, 225, 275, and 325 meters. These marks are placed on the reticle to aid the gunner in tracking a moving target.

9. Rear Sight

The rear sight (fig. 7) consists of two stamped metal parts and a rubber boot. The fixed portion of the sight is marked with the words COLD and NORM indented on the bottom and it has two peepholes punched in it. The second piece has a small window in it and slides up and down on the fixed portion. The rubber boot is placed over the top portion of the sight to protect the gunner's eye from the sharp metal edges. By moving the slide up or down to aline the window with one of the peepholes, the sight can be adjusted for the temperature of the rocket. When the slide is alined with the lower peephole and only the word NORM is visible at the bottom, the sight is set for any temperature above 32° F. When the window in the slide is alined with the upper peephole and the word COLD is visible, the sight is set for 32° F. and below. The M72 is boresighted at the time of manufacture. No other adjustments are required.

Section III. OPERATION, FUNCTIONING, MALFUNCTIONS, AND IMMEDIATE ACTION

10. General

This section describes the operating procedure for the M72 and the functioning of the launcher. It further explains the most common malfunctions and the correct method of applying immediate action.

11. Operation

a. To prepare the M72 for firing, the gunner can refer to the illustrated firing instructions that are located on the left side of the launcher (fig. 8). The gunner must first check the sight setting, remove the rear cover retaining pin, rotate the rear cover downward, and allow the sling assembly (including the front cover) to fall free. To extend the launcher he grasps the bail handle and pulls to the rear until the detent locks the rear tube into position. The next step is to remove the rear safety pin and place the launcher on his shoulder. The trigger safety is then pushed forward to the release position, and the gunner aims and depresses the trigger bar. Once the M72 has been fired the launcher and the sling assembly are discarded.

b. In the event the M72 is prepared for firing but is not fired, it may be returned to the carry position by reversing the preparation procedure. First reset the trigger safety and then remove the launcher from the shoulder. Replace the rear safety pin. Depress the detent (fig. 7) and partially collapse the launcher. Fold the rear sight down so that it will slide into the sight cover as the launcher is completely collapsed. Fold the front sight forward over the muzzle and replace the front cover and sling assembly. The M72 is now back in its original state except that it is no longer watertight.

Caution: **The rear safety pin must not be removed until the launcher is fully extended. If the launcher is to be returned to the carry position the rear safety pin must be replaced before the detent is depressed and the launcher is collapsed. If the safety pin is not replaced before the launcher is collapsed, the firing pin may strike the primer with sufficient force to fire the rocket.**

c. The M72 can be transported by utilizing the adjustable sling. This sling should first be adjusted to fit the individual comfortably. The M72 should be slung with the muzzle or forward end down (fig. 9).

12. Functioning of the Launcher

Once the M72 has been prepared for firing and the trigger is depressed, the tension on the firing pin cable is released. The firing pin spring drives the firing pin to the rear into the primer. The primer detonates and ignites a small, black powder charge in the primer block. The flash from this burning powder is conducted down the flash tube to the igniter in the nozzle of the rocket. This igniter activates the propellant in the rocket motor.

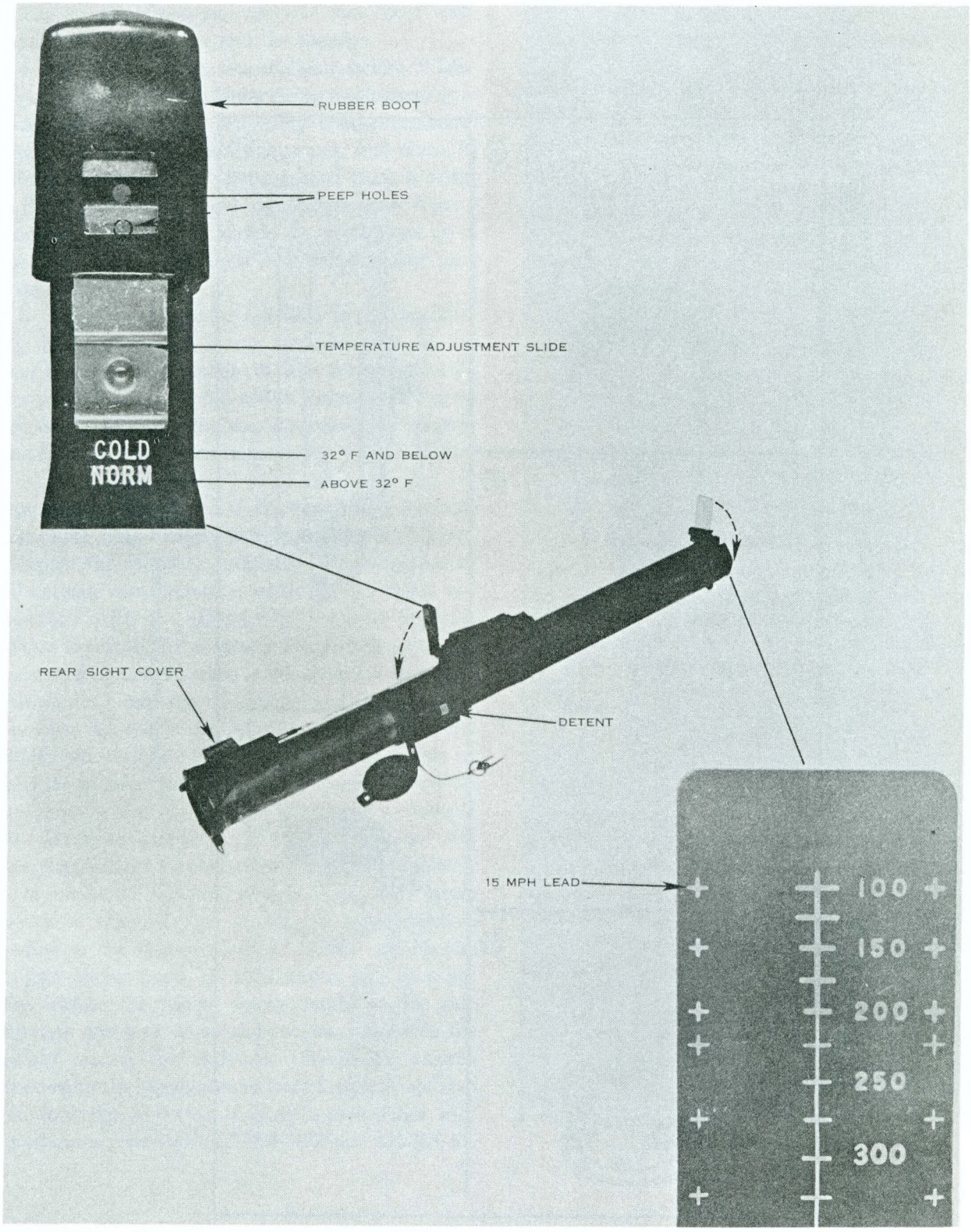


Figure 7. M72 sights.

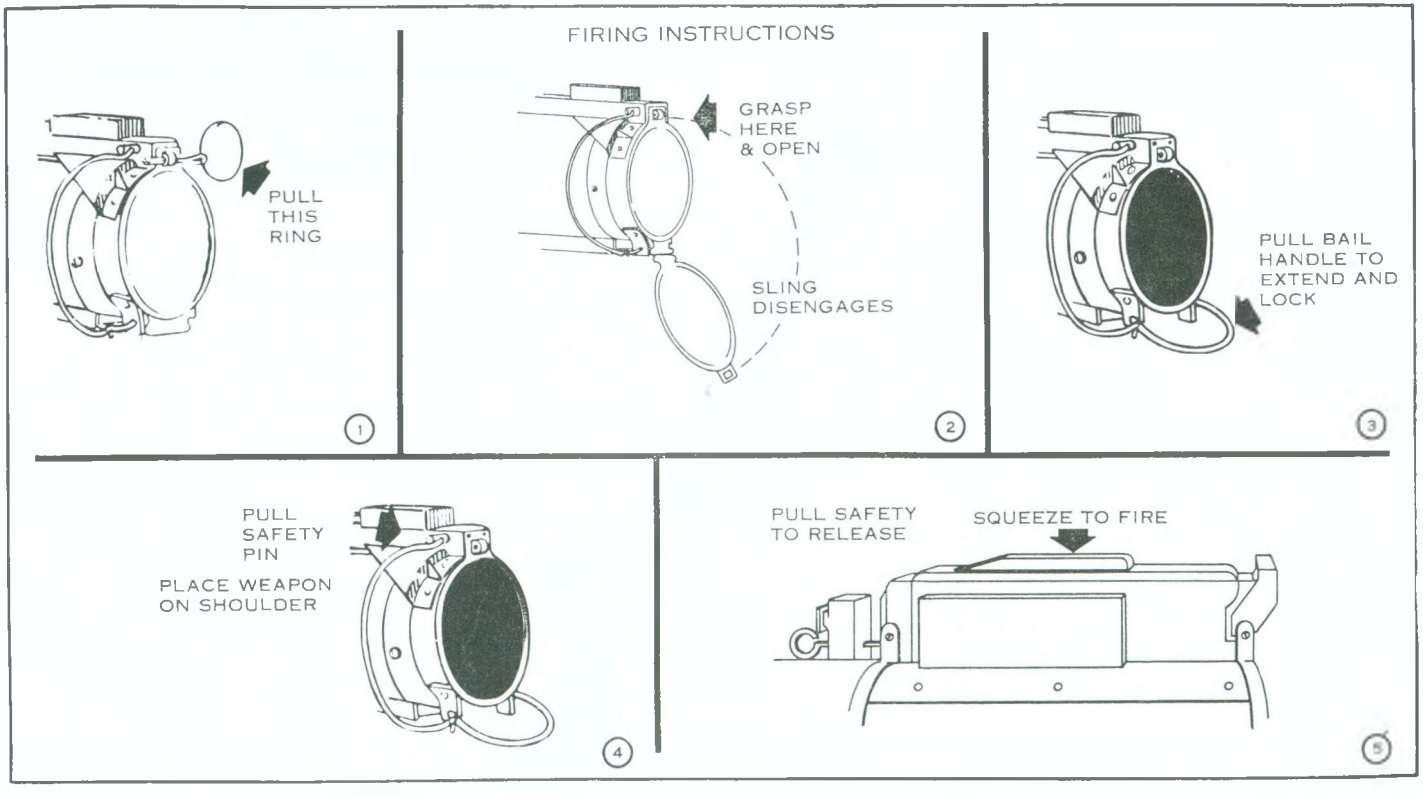


Figure 8. Firing instructions.

13. Malfunctions and Immediate Action

The most common malfunctions that occur with the M72 are the misfire and the hangfire.

a. Misfire. A misfire is a complete failure to fire, which may be due to a faulty firing mechanism or a faulty element in the propelling charge explosive train. A misfire is not dangerous, but since it cannot be immediately distinguished from a delay in the functioning of the firing mechanism or from a hangfire (*b* below), it should be considered as a possible delay firing, until such a possibility has been eliminated.

b. Hangfire. A hangfire is a delay in the functioning of the propelling charge explosive train at the time of firing. The amount of delay is unpredictable but in most cases will fall within the range of a split second to several minutes. Therefore, a hangfire cannot be distinguished immediately from a misfire.

c. Misfire Procedures. After failure to fire re-squeeze the trigger and if the round does not fire return the trigger safety handle to the safe position. Keeping the launcher trained on the target, wait 10 seconds then reinsert safety in the firing pin housing. After a 1 minute delay, squeeze the boot detent to retract the weapon at least 1 inch. Pull the recocking latch rod handle forward until it stops and release it. Grasp the bail handle and re-extend the launcher to the locked position. Withdraw the safety pin. *All this time the weapon must remain as near the on-target position as possible and the backblast area must be clear of personnel. Particular care should be taken by the gunner in removing the launcher from his shoulder, and keeping his body out of the backblast area during the recocking phase.* Next, the weapon must be reaimed and the trigger safety handle pulled to the release position. Again squeeze the trigger spring boot. If the weapon still does not fire, return the trigger safety handle to the safe position and wait 10 seconds before reinserting the safety pin in the launcher. Keep the weapon trained on the target area at least 1 minute, collapse the launcher, and then discard in accordance with procedures prescribed in TM 9–1950 and AR 385–63.



Figure 9. Carrying position.

CHAPTER 3
AMMUNITION

14. General

Ammunition for the M72 is issued as a complete rocket (fig. 10). The propelling charge is not adjustable and the rocket comes packed in the launcher as a unit. The rocket consists of a rocket head, a fuze, and a rocket motor which contains the propellant and its igniter. A nozzle and a fin assembly are rigidly attached to the rear of the motor. The fuze closure serves also as the coupling for the rocket head and motor. Ammunition for the M72 is classified according to the type rocket head and is designated high explosive antitank (HEAT). Each rocket is 20 inches long, weighs approximately 2¼ pounds, has a muzzle velocity of about 475 feet per second, and has an approximate maximum range of 1,000 meters.

a. High Explosive Antitank (HEAT) Rocket. The 66-mm HEAT warhead M18 (fig. 10) consists of a tapered, thin-gauge steel body. It is cylindrically shaped and contains a shaped charge composed of two-thirds of a pound of octol explosive held in place by a thin copper cone. When detonated, the force and heat of this explosive is focused by the copper cone, forming a small but powerful jet. The forward end of the head, called the ogive, is made of thin metal and is hollow. The ogive holds the shaped charge at the required distance from the target to obtain the maximum effect of the jet. This distance is called standoff. The jet penetrates the target and, in the case of armor, causes particles to be knocked off the inside surface. If the jet hits the engine or the ammunition storage, it will start a fire or cause an explosion.

b. HEAT Rocket. The HEAT rocket is used primarily against armor. It can be used against secondary targets such as gun emplacements and pillboxes with excellent results. The HEAT warhead is capable of penetrating the armor of any known tank.

15. Technical Characteristics

a. Nose Cap Assembly. The nose cap assembly (fig. 10) contains the piezo-electric element which is crushed on impact with the target. When the

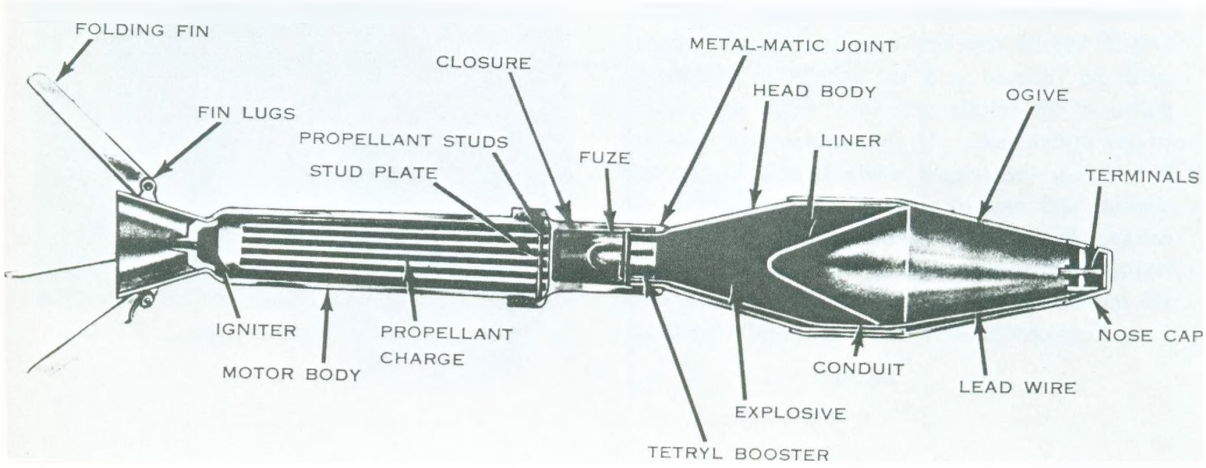


Figure 10. The 66-mm HEAT rocket.

piezo-electric element is crushed, a small amount of electrical energy is developed and transmitted through the lead wire to the fuze. This current initiates the firing train starting at the electrical detonator.

b. Rocket Motor Ignition System. The rocket motor ignition system (fig. 11) for the M72 is composed of the following elements: firing pin housing, firing pin and firing pin spring, M29A1 percussion primer, primer block with black powder flash charge, flash tube, and black powder igniter. The following sequence takes place as the unit is cocked and fired: The firing pin spring is compressed as the inner tube is extended and locked into position (fig. 11). When the trigger is actuated, the firing pin is released and strikes the center of the M29A1 primer with sufficient force to detonate the primer. The flash from the primer ignites the flash charge located directly behind the primer in the primer block. The ignited black powder generates a flash or flame which travels within the plastic flash tube to the igniter. The flame is dispersed within the igniter body through radial holes in the flash tube extension, igniting the black powder charge in the igniter. The thin plastic film which seals the front surface of the igniter is burned away, allowing the flame front to progress to the propellant and ignite it. The igniter remains in the rocket nozzle until the pressure reaches several hundred pounds per square inch. This pressure level assures that the propellant is ignited and that combustion is stabilized. Further increase in pressure blows out the igniter body, and the rocket will start to accelerate. The time required for this sequence of events is about 40 milliseconds between the time the trigger is squeezed and the launching of the rocket.

c. Rocket Propulsion. The rocket is propelled by a discharging jet of hot gas generated by the burning propellant. The basic principle of rocket propulsion may be described as follows: In the case of a rocket motor, the gas pressure is built up by the burning propellant within the motor. When an opening is made at one end of the chamber the pressure at the open end drops to near atmospheric level while the

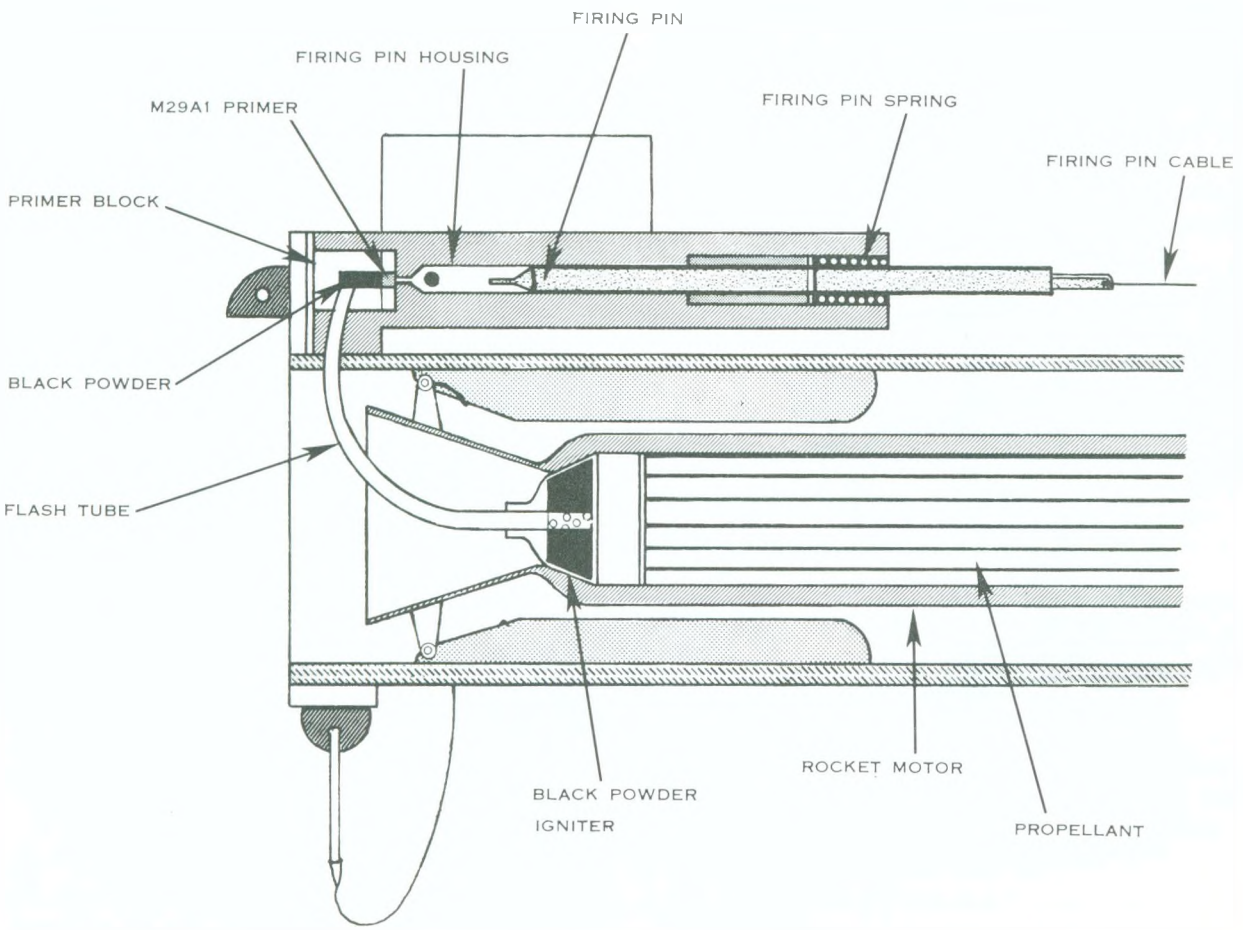


Figure 11. Rocket motor ignition system.

pressure on the closed end or surface remains momentarily much greater than the normal atmospheric pressure. As a result of this unbalanced pressure within the rocket motor, the rocket starts to move in the direction of the closed end as a stream or jet of gas is exhausted from the open end or nozzle. The speed and the quantity of the gases escaping to the rear determine the speed of the rocket. Pressure within the rocket motor will be maintained until the propellant is completely burned and, therefore, the rocket will accelerate until the burning of the propellant is completed. The total burning time is controlled by the propellant type and size.

d. Fuze. The M412 fuze is drop-safe and bore-safe. The minimum arming distance is about 28 feet. For graze functioning of the fuze, there is a spring-loaded firing pin which is released by decelerating force of graze impact. This fires a stab primer located adjacent to the detonator. This action, in turn, activates the explosive train which explodes the warhead.

e. Fin Assembly. Six holding fin attachment lugs are attached as an integral part of the motor. These fins are actuated by springs. As the rocket clears the launcher, the fins spring out and stabilize the rocket in flight (fig. 10).

16. Identification of Rocket and Launcher

The rocket and launcher are identified as to type by color and marking. The color scheme is as follows:

Type and marking	*Components*
HEAT rocket; olive drab in color, stenciled in yellow.	Rocket, live percussion primer, live motor, live fuze with booster, and live warhead M18.

17. Packaging

Five complete systems are packaged in a fiberboard inner pack and three inner packs in a wire-bound wooden outer pack. The inner pack with end pads and five M72s weighs 27½ pounds and the gross weight of the outer pack with 15 M72s weighs 120 pounds. The inner and outer boxes are marked as shown in figure 12.

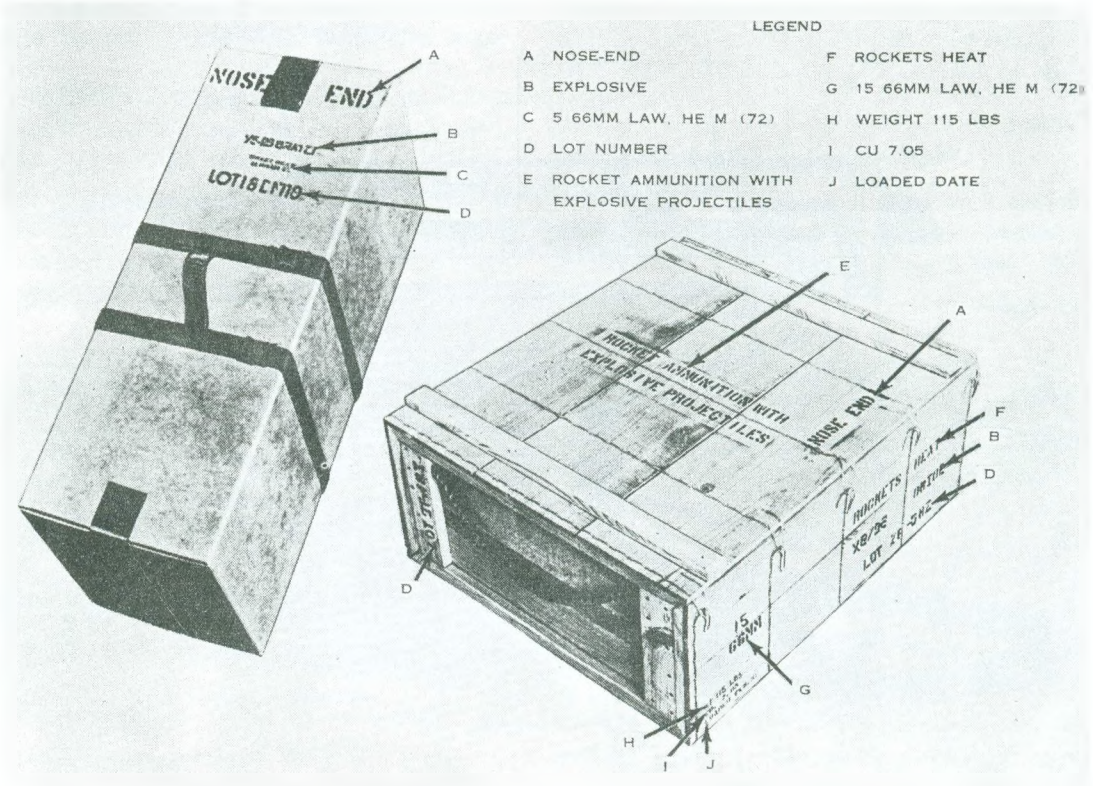


Figure 12. Packaging.

CHAPTER 4
M72 LAUNCHER: MAINTENANCE AND INSPECTIONS, DECONTAMINATION, DESTRUCTION

Section I. MAINTENANCE AND INSPECTIONS

18. Maintenance

The M72 requires no preventive maintenance or repairs at first or second echelon. No repair parts are supplied to the using organization.

19. Inspections

Because the M72 is issued as an item of ammunition rather than a weapon, inspections should be limited to visual examinations of the sealed unit.

a. The M72 should be examined to assure that all of the seals are intact and that the tube has not been cracked, punctured, or crushed. The rubber boots covering the bar trigger and the detent should not be torn or punctured and the sling should be serviceable. Since the M72 is watertight at the time of issue, the launcher should not be extended until the unit is ready to be fired.

b. The rear cover retaining pin and the safety mechanisms should be in place. The exposed portions of both front and rear sights should also be examined to detect possible damage.

Section II. DECONTAMINATION

20. Procedures

If the M72 becomes contaminated, decontamination personnel should use a complete set of protective clothing (permeable or impermeable) including impermeable protective gloves and a protective mask.

21. Types of Contamination

a. If contamination occurs with chemicals other than the blister agents, G-series or V-agents, decontamination can be accomplished by airing or washing the contaminated areas.

b. If the source of contamination is a blister agent, G-series or V-agent, the affected areas should be cleaned of all dirt, grease, or oil and scrubbed with soap and water or cleansed with noncorrosive decontaminating agent DS–2. For more complete information on decontaminating consult FM 21–40.

Section III. DESTRUCTION

22. General

a. When capture of the M72 is imminent or if it becomes necessary to abandon the system in the combat zone, the unit commander, in accordance with instructions from higher command, may order its destruction.

b. Adequate destruction requires that all parts essential to the operation of the system be destroyed or damaged beyond repair. Priority is given, however, to the destruction of those parts most difficult to replace, such as the sight and firing mechanism. It is important that the same parts of all systems be destroyed so the enemy cannot construct one complete unit from several damaged ones.

23. Destruction of the M72

Destruction of the M72 can be accomplished by any one of four methods indicated in TM 9–1340–214–10. For complete instructions see the TM.

a. Burning.
b. Demolition.
c. Gunfire.
d. Disposal.

CHAPTER 5
PREPARATORY MARKSMANSHIP TRAINING

24. General

Preparatory marksmanship exercises are designed to train gunners in the essentials of good marksmanship and develop the correct habits necessary to become good marksmen before range firing begins. There are four areas in which a gunner should become proficient before firing the M72 for familiarization. These areas include: aiming, trigger squeeze, immediate action, and positions (app. II).

25. Aiming

a. Rear Sight. The rear sight on the M72 is basically a simple peepsight. Before sighting, the gunner should inspect the sight to insure the slide is in the correct position or setting for the existing conditions of temperature (fig. 7). The gunner sights through the rear sight by placing his eye on line with the peephole and sighting toward the front sight reticle.

b. Reticle Pattern. The M72 sight reticle has a vertical center range line that is graduated in 25-meter increments (range segments) from 100 to 325 meters. On each side of the range line at ranges of 100, 150, 200, 225, 275, and 325 are lead index marks representing 15 miles per hour of target speed (fig. 13).

c. Use of Sights. In general, to sight with the M72 the gunner must first estimate the range to the target. Once the range is estimated, the gunner places the launcher in position on his shoulder so that his eye is close to, and in line with, the peephole in the rear sight. The gunner looks through the peephole at the sight reticle and places the point on the range line *corresponding to the estimated range* on the target. Examples describing specific rules for aiming follow:

(1) *Stationary target.* To engage a stationary target the gunner estimates the range to the target, finds this range on the reticle, and places that point on the target's center of mass (fig. 14).

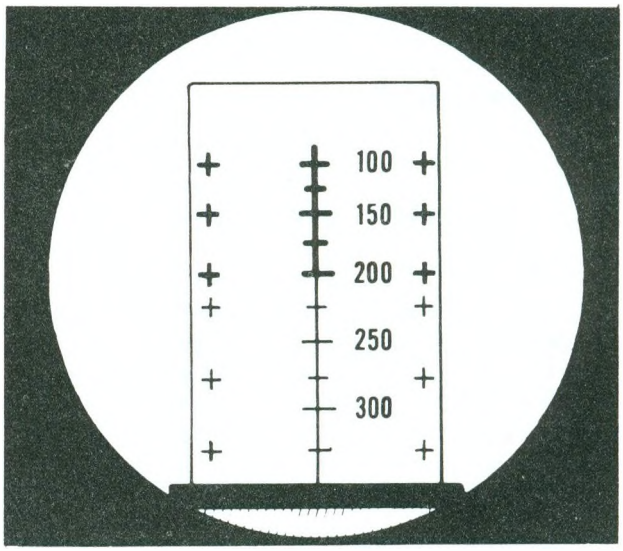


Figure 13. M72 sight reticle.

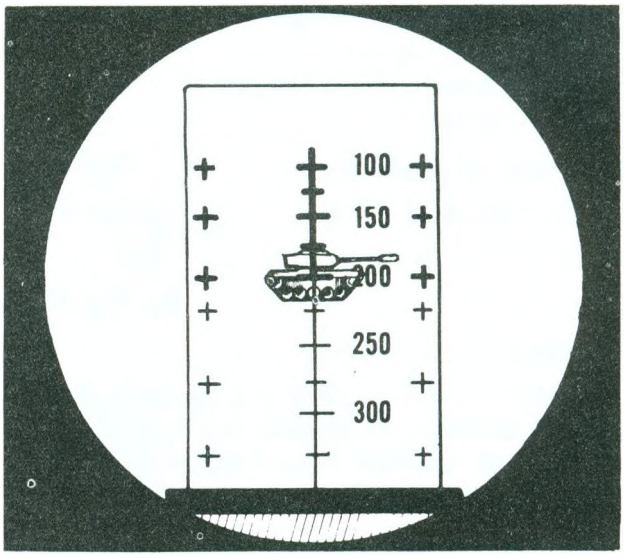


Figure 14. Stationary target at 200 meters

(2) *Targets moving directly toward or away from the gunner.* Estimate the range to the target; locate this point on the reticle.

Place the reticle so the range segment is on the target center of mass (fig. 15). If the target is moving directly away from the gunner, the procedure would be the same.

(3) *Targets moving directly across the gunner's front.* With a target moving perpendicular to the gunner's line of sight, the gunner must estimate the range to the target and the speed the target is moving. The sight reticle should be placed on the target so that the vertical range line is always in front of the target's direction of travel. The estimated lead and estimated range are applied to the target's center of mass (fig. 16). The lead marks on the M72 sight reticle indicate 15 miles per hour of speed. If the gunner estimates the target's speed as something less than 15 miles per hour he must approximate the amount of lead necessary to engage the target by visualizing a point on the reticle (fig. 17).

(4) *Targets moving at an angle toward or away from the gunner.* When the target is moving toward the gunner at an angle where more of the front of the target is visible than the side (0°–45°) the gunner should estimate the range to the target and place that range on the target's center of mass (fig. 18). If the target is moving at an angle where there is more of the side visible than front (45°–90°) the gunner would estimate the range, estimate the speed it appears to be moving, and apply one-half the lead to the center of mass (fig. 19).

26. Trigger Squeeze

The trigger on the M72 is unique in that it is a bar located on the top of the launcher. To fire, pressure must be applied straight down. The thumb may be placed under the launcher or alongside the tube depending upon the size of the gunner's hand, and whichever is more comfortable. The gunner should apply a steady, smooth squeeze.

27. Immediate Action

The gunner should be familiar with the procedure for applying immediate action before he is allowed to fire. The only time immediate action need be applied is in the event of a malfunction. The detailed steps of immediate action are found in paragraph 13.

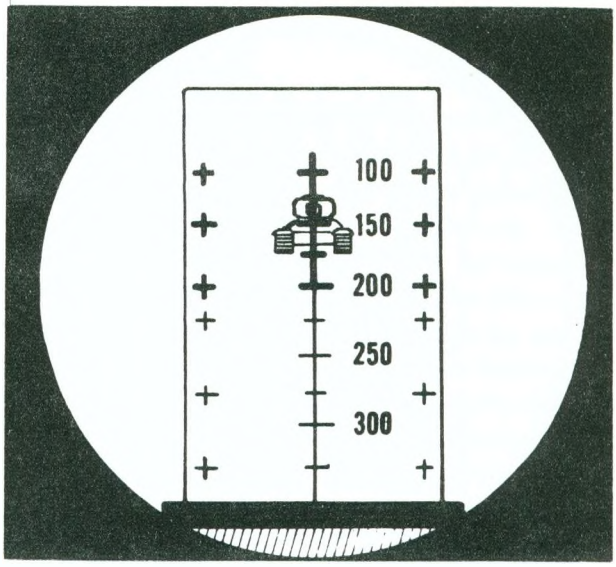


Figure 15. Target moving toward gunner at a range of 150 meters.

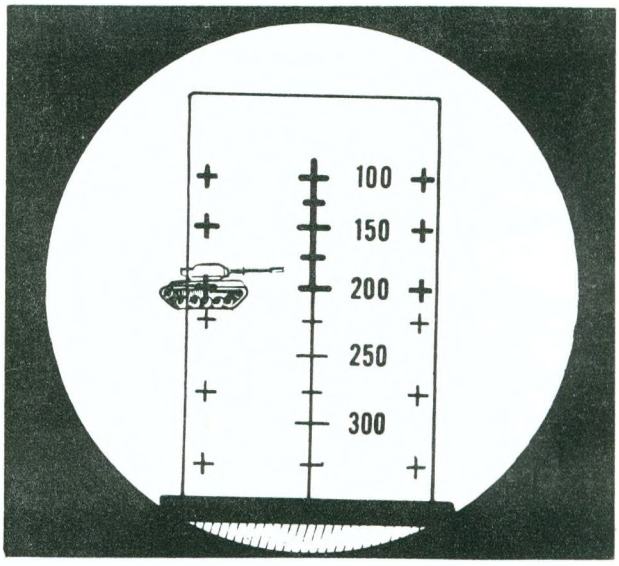


Figure 16. Target moving left to right, 15 miles per hour at 200 meters.

28. Positions

The M72 may be fired from the right or left shoulder in the standing, kneeling, modified kneeling, sitting, or prone positions. The exact positions may vary slightly to allow for the conformation of the individual's body. The gunner must insure that his position is stable and comfortable and that it is the most suitable one for engaging the target. In general, the most suitable positions for engaging a moving target are standing, modified kneeling, and

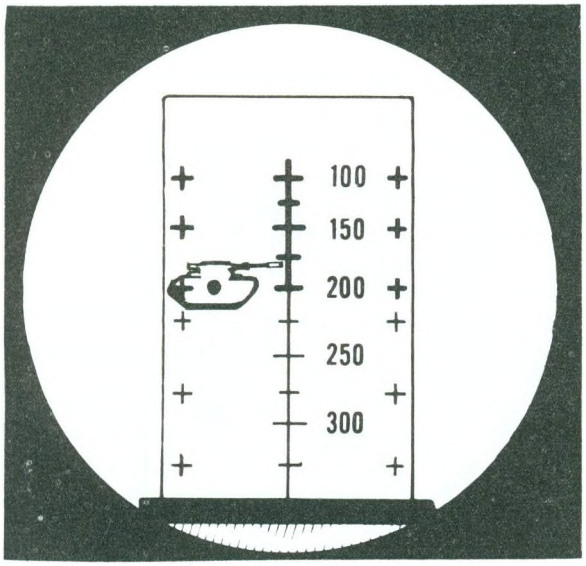


Figure 17. Target moving left to right, 10 miles per hour at 200 meters.

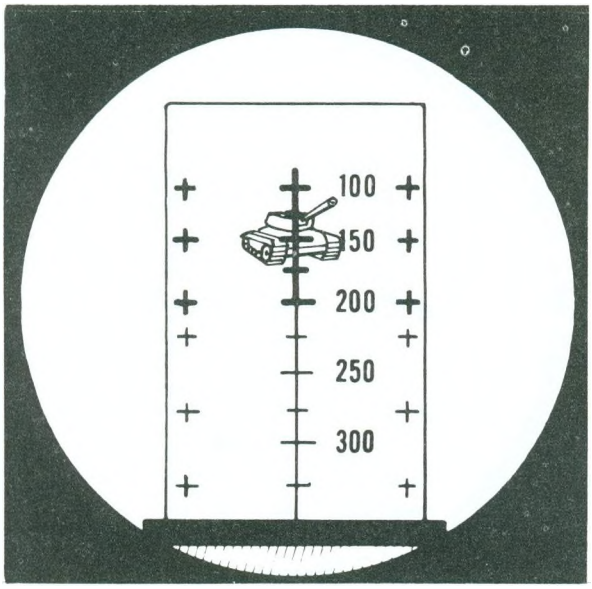


Figure 18. Target moving toward gunner, 150 meters, at an angle of 45° or less (more front than side visible).

sitting. All of the positions are suitable for stationary targets. Situation, terrain, and gunner preference should govern the selection of the best position. Whenever possible, gunners should employ the following positions with support, as the inherent stability of a supported position aids the gunner when aiming. If a gunner is left-handed the procedures used for positions should be reversed.

a. Standing Position. The standing position for the M72 (fig. 20) is similar to the standing position

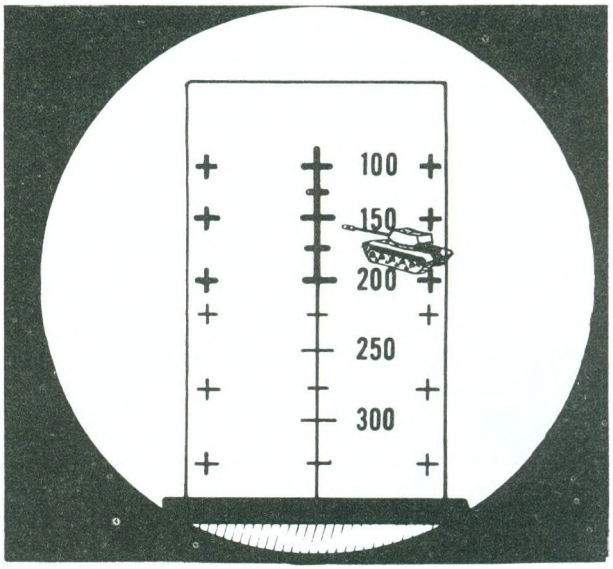


Figure 19. Target moving at an angle away from gunner, 175 meters, 20 miles per hour, at an angle of 45° or more (more side than end showing).

for firing a rifle. Face the target, execute a half-right face, spread the feet a comfortable distance apart, and place the launcher on the shoulder, The body should be well balanced with the hips level. The left hand should be directly under the forward portion of the launcher. The right elbow should be placed against the side for stability. To traverse this position, move the body from the ankles up.

b. Kneeling Position. There are two satisfactory kneeling positions. The first position described (fig. 21) is preferable for tracking moving targets. To assume the kneeling position for engaging moving targets, face the target, execute a half-right face, and kneel on the right knee with the upper part of the right leg vertical. Point the left leg toward the target with the left foot at a right angle to and opposite the right knee. The left leg forms a right angle to the ground. Hold the body erect with the left elbow under the launcher and the right elbow against the side. The second kneeling position (fig. 22) is similar to the kneeling position for firing the rifle. Kneel on the right knee with the right thigh at a 90° angle with the line of aim and sit back on the right heel, shifting the weight forward. As viewed from the front, the left leg is vertical. It need not appear vertical, however, when viewed from the side. Rest the upper arm forward of the left knee and the right arm against the side. Either position may be used when firing at stationary or



Figure 20. Standing position.

moving targets; however, the first kneeling position allows easier traverse.

c. Sitting Position. There are two satisfactory sitting positions. The first position described (fig. 23) is preferable for tracking the target because it gives quicker and easier movement of the body. In the first position the gunner will face the target, execute a half-right face, and sit with legs crossed. Lean slightly forward from the hips. Keep the back straight. Place the left elbow under the launcher and the right elbow against the side. Place the right hand on the trigger and grasp the forward section of the tube with the left hand. For all tracking movements, move the body from the waist. Occasionally it may become necessary to change the entire position. However, this position allows a traverse of approximately 90° without changing the position. To assume the alternate position (fig. 24), face the target, execute a half-right face, and sit with the legs partially extended and well apart. Brace by digging the heels into the ground in the conventional rifle position. Rest the elbows forward of the knees to avoid bone-to-bone contact. While the traverse is more restricted than in the first sitting position, this position is suitable for firing at a moving or stationary target and is steadier.

d. Prone Position. To assume the prone position (fig. 25), lie down at an angle of not less than 45° to the line of fire in order to keep clear of the backblast area. The back should be straight and the right leg directly on a line running through the right hip and right shoulder. Move the left leg as far as possible with comfort. Keep both heels on the ground. Hold both elbows well below the launcher. Hold the head as steady as possible with the right eye lined up with the sights. If an occasion which requires tracking a moving target should arise, maintain a 45° angle so the backblast is not directed at the feet and legs.



Figure 21. Kneeling position.

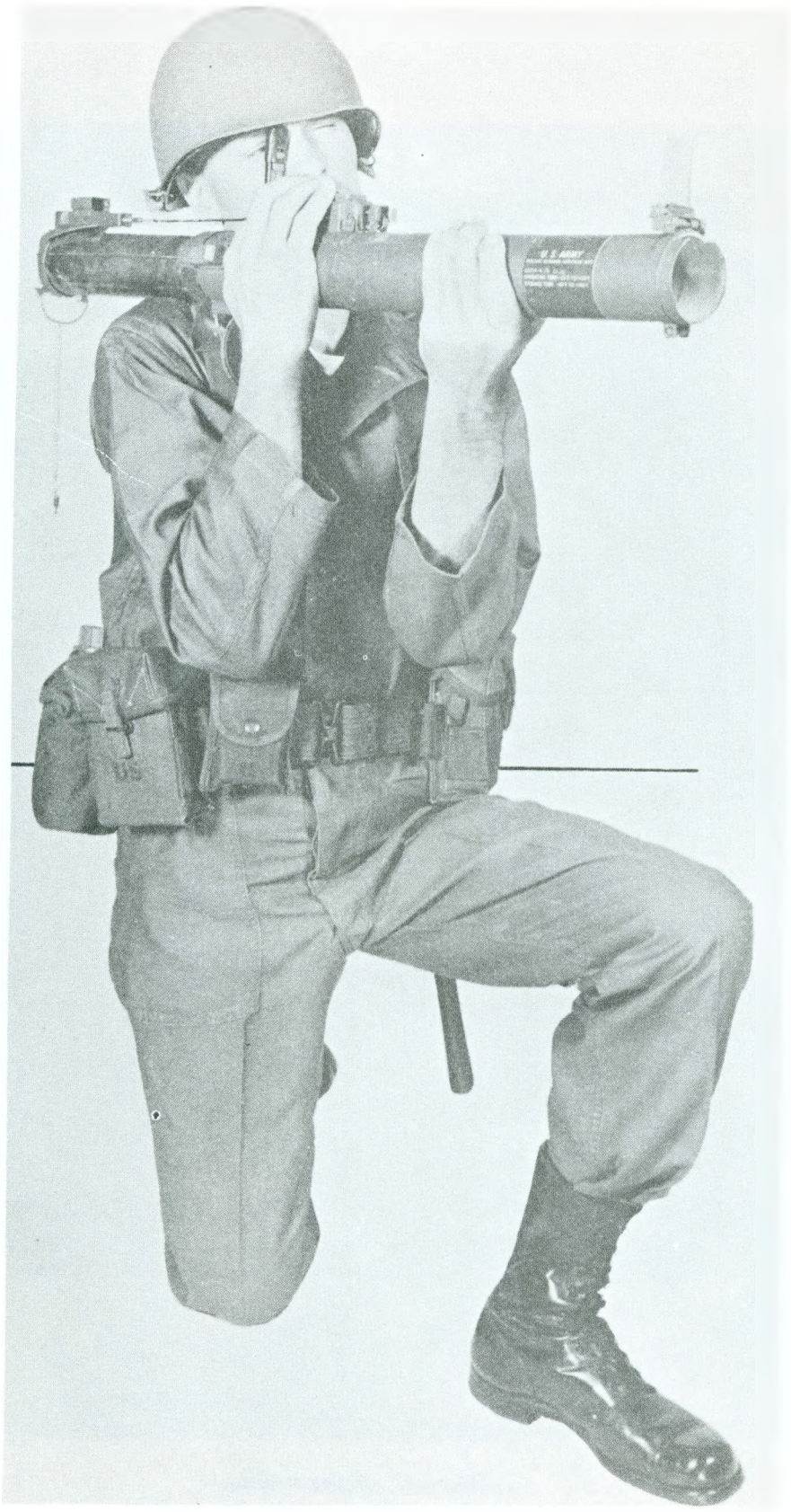


Figure 22. Modified kneeling position.



Figure 23. Sitting position.



Figure 24. Alternate sitting position.



Figure 25. Prone position.

CHAPTER 6
RANGE PROCEDURES AND SAFETY

29. Backblast Area for M72

The M72 has no recoil because it is an open chambered weapon. The propellent gases escape to the rear of the launcher and can cause severe injury to personnel and damage to equipment located within close proximity to the breech of the launcher. The total backblast area for the M72 extends 40 meters to the rear of the launcher (fig. 26). The danger zone extends 15 meters to the rear of the tube and has a base of 8 meters. All personnel, equipment, and flammable materials must be clear of this area. The caution zone extends an additional 25 meters beyond the flash zone and has a base of 25 meters. Personnel in this area could be injured from secondary missiles that are thrown to the rear by the blast. In a training situation the entire 40-meter area should be marked off and kept clear of all personnel and equipment.

30. Range Firing Procedures

The following precautions apply when firing the M72.

a. Before firing, the entire backblast area must be clear of all personnel, equipment, and flammable material.

b. Range firing does not begin until the officer in charge knows the range is clear. He gives the command to fire.

c. At least one officer must be present during all firing.

d. No person moves to, or leaves, the firing line without the permission of the officer in charge.

e. The ready line is placed to the flank of the firing line.

f. No one passes into the area behind the firing line, and forward of the rear safety line, without permission of the officer in charge.

g. All munitions are covered to protect them from the rays of the sun.

h. M72s are not fired when temperatures exceed the operating limits of the munition (−25° F. to +135° F.).

i. To account for all duds when firing HEAT rockets, a noncommissioned officer is designated to count the number of rockets fired and the number of explosions. Range firing and the destruction of duds are conducted according to the provisions outlined in AR 385–63 and TM 9–1903.

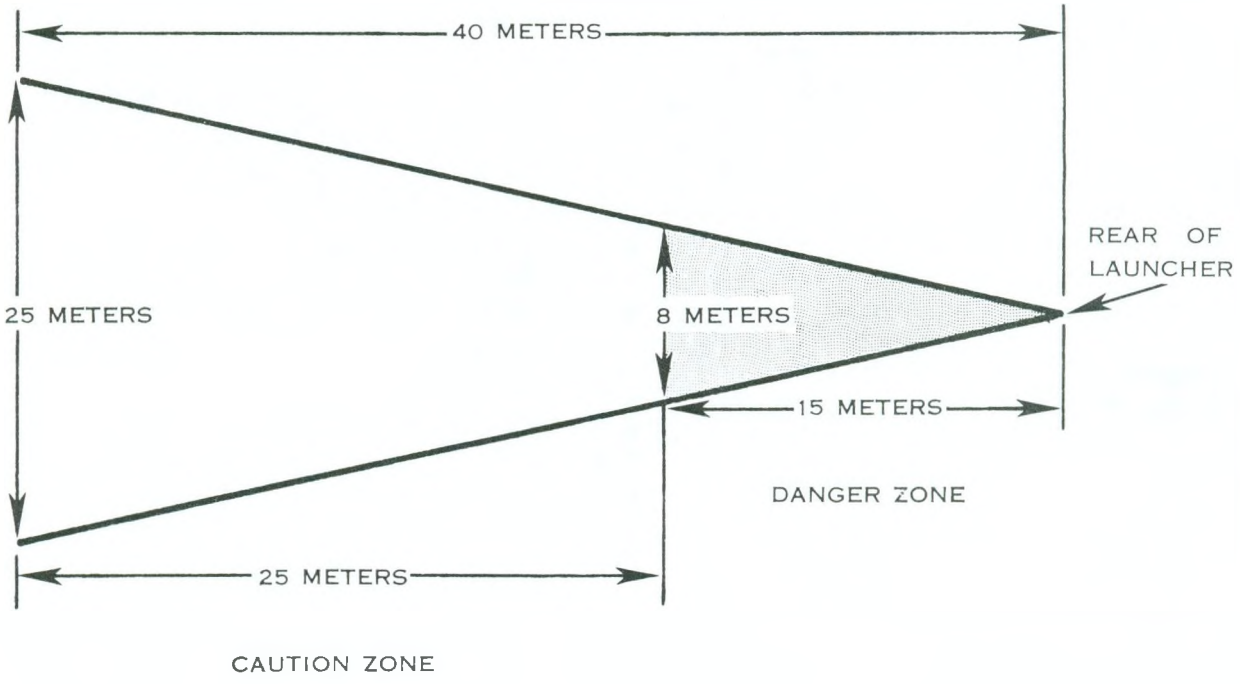


Figure 26. M72 backblast area.

CHAPTER 7
TECHNIQUE OF FIRE

31. General

Training in technique of fire teaches the gunner of the M72 to place effective fire on the target. It should be given after preparatory marksmanship training, but prior to range firing. This training includes range estimation, speed estimation, and target vulnerability.

32. Range Estimation

With the M72, the maximum range at which targets can be accurately engaged is 325 meters; therefore, range estimation exercises need only go as far as 325 meters. In making range estimates the emphasis should be placed on speed and accuracy. Training should begin with stationary targets and gradually progress to moving targets as the gunner's proficiency increases. For principles and procedures of range estimation see FM 23–71.

33. Speed Estimation

a. The 66-mm HEAT rocket, M72, was designed primarily for use against tanks and other armored vehicles. Normally, these targets are in motion and accurate engagement depends upon the gunner's ability to estimate speed as well as range.

b. The ability to estimate speed is developed in approximately the same manner as estimating range; that is, by constant practice. The trainee should begin by estimating speed at known ranges and constant direction. The types of vehicles should be varied. As the gunner improves, the ranges, directions, and types of vehicles can be varied at the same time. (Tanks should be used whenever possible.)

34. The Vulnerability of Armor

a. A tank, without the protection afforded by dismounted infantry, is vulnerable to a close-in attack by well-armed foot troops. When buttoned up, the visibility of the tank crew is restricted. These "blind spots" can be used very effectively as avenues of approach for tank killer teams.

b. The tank usually has its heaviest armor located on the front slopes. By comparison, the rear, sides, and bottom have much less armor protection. A gunner should attempt to engage a tank from the side whenever possible. The side offers the largest possible target area and less armor protection than the front. The gunner should always attempt to obtain a center of mass hit.

CHAPTER 8
TACTICAL EMPLOYMENT

35. General

The M72 is issued as a munition rather than as an individual weapon, and is carried and employed by the soldier in addition to his basic combat arm. Basic loads for the M72 are assigned to each unit as with other types of ammunition. Individuals assigned to units authorized a basic load should be trained in the use of this weapon. The M72 supplements other organic antitank weapons. It provides the primary means of antitank protection for the rifle squad and other units or installations not having organic antitank weapons. This weapon may be employed as an offensive weapon by assault elements, or as a defensive weapon by any combat or noncombat element of the Army.

36. Offensive Actions

In the attack, light antitank weapons should be readily available to influence the action where necessary. Due to their relatively short range, they should be interspersed throughout the maneuver element. As the weapon is designed to be employed by an individual, the firer must look to the rear before firing to assure backblast clearance. Light antitank weapons are employed primarily against armored vehicles; they may also be employed against light vehicles, bunkers, pillboxes, or other crew-served weapons' positions. They are particularly effective against built-up areas, fortified positions, or strong enemy defenses.

37. Defensive Actions

Light antitank weapons should be issued to personnel in such a manner as to be positioned laterally and in depth to cover the most likely avenues of armored approach. Lateral dispersion is necessary to increase the probability of obtaining oblique fire on enemy armor approaching the defensive position. Due to its one-shot capability, more than one M72 should normally be assigned to those individuals designated to fire the weapon. Since riflemen may be issued the M72 to fire from their normal fighting positions, consideration must be given to the clearance of backblast areas in conjunction with the construction of positions. Although the M72 is employed primarily against armor, it may also be employed against grouped, attacking personnel.

38. Specialized Actions

The ratio of destructive power in comparison with its light-weight makes the M72 an excellent weapon for combat patrols, ambush parties, and tank-killer teams. It can be effectively employed by raiding parties against such targets as command posts, communications installations, and supply dumps. The tank-killer team can operate in either an offensive or defensive action. In general, tank-killer teams should be employed during periods of limited visibility and in areas where cover, concealment, and withdrawal routes are readily available. As a minimum the team should have a leader, a support element, and an antitank element. A four-man team provides the minimum number of personnel to accomplish this type of mission. Some areas which are suited for tank-killer operations are: dense forests with only a few roads, natural defiles, terrain that canalizes enemy armor into a narrow front, and built-up areas such as towns or cities. Ambush sites set up along any of these narrow avenues of approach enable the tank-killer team to destroy tanks and block avenues of approach to future traffic. Hit-and-run tactics should be used by tank-killer teams. Their mission is to destroy, delay, disorganize, and demoralize enemy armor formations before they can attack. Because of its lightweight and high penetrating power the M72 is ideally suited for use in a tank-killer team.

APPENDIX I
REFERENCES

AR 385–63	Regulations for Firing Ammunition for Training, Target Practice, and Combat.
FM 7–15	Infantry, Airborne Infantry, and Mechanized Infantry, Rifle Platoons and Squads.
FM 21–5	Military Training.
FM 21–6	Techniques of Military Instruction.
FM 21–30	Military Symbols.
FM 21–40	Small Unit Procedures in Chemical, Biological, and Radiological (CBR) Operations.
FM 23–71	Rifle Marksmanship.
TM 9–1340–214–10	Operator's Manual: 66-mm Light Antitank Weapon System, M72.
TM 9–1903	Care, Handling, Preservation, and Destruction of Ammunition.
TM 9–1950	Rockets.
TM 9–2205	Fundamentals of Small Arms.
DA Pam 108–1	Index of Army Motion Pictures, Filmstrips, Slides, Tapes, and Phono-Recordings.

APPENDIX II
ADVICE TO INSTRUCTORS

1. Purpose

This appendix is a guide for instructors. Its contents should not limit their initiative and originality, provided they observe the necessary safety precautions.

2. Methods of Instruction

a. Instruction should be presented using explanation, demonstration, and application. The coach and pupil method is recognized as extremely effective.

b. Each man's training must be closely supervised to insure a high standard of proficiency and knowledge.

3. Training Objectives

The objective of training outlined herein is to train the light antitank weapon gunner to effectively employ the weapon in combat.

4. Assistant Instructors

Prior to instruction, train selected personnel as demonstrators and assistant instructors. Use at least one assistant instructor for each four men undergoing training. Assistant instructors must be able to correct errors and answer questions pertaining to the training. To give the students a clear picture of the work under discussion, make sure the demonstrators are trained and rehearsed thoroughly so demonstrations are correct in every detail.

5. General Training Notes

a. The minimum time required to train the gunner in the use of the M72 is 4 hours. This 4-hour block should be given in four successive hours rather than at four separate times. Training in tactics and techniques of employment should be covered during unit training.

b. The expended M72 launcher is considered to be the most valuable training aid available for training with this system. Whenever possible these launchers should be obtained and used throughout the course of instruction. Other training aids may be constructed using (as a guide) the photographs and diagrams contained within this manual. Regardless of whether the training aids are requisitioned or constructed, they should be available in sufficient time to assure that all assistant instructors are thoroughly familiar with them.

c. The instructor, demonstrators, and assistant instructors should be well-rehearsed and knowledgeable on the M72. The instructor should make maximum use of explanation and demonstration. Practical exercises should be closely supervised to assure that the students do not develop poor habits. There should be at least one assistant instructor per four students during practical work. During live firing at least one safety NCO per two students should be present, preferably one per man.

d. In the event that expended launchers are not available, or time prohibits the suggested 4-hour course, a training film is available which can be used for familiarization purposes (app. I).

e. The mount of pressure required to fire the M72 is great when compared with other infantry weapons, therefore it is suggested that three fingers be placed on the bar and that the pressure be applied to the tip of the bar. It should be noted that this trigger has a long squeeze and as a result there is a tendency for the gunner to anticipate the discharge of the rocket and flinch. Practice with expended launchers that have the firing cables intact can be helpful in overcoming this tendency.

f. When setting the rear sight for the appropriate temperature, the gunner should remember that the temperature of the rocket propellant is the critical factor as to what setting should be used on the sight, not just the outside temperature; e.g., if the munition has been stored in a warm place, the NORM setting should be used even though the outside temperature may be below freezing.

g. It is suggested that the kneeling position be used for familiarization firing to give the gunner maximum support and the range officer better control of the firing line.

6. Suggested Course of Training

For a suggested course of training (4 hours), see figure 27.

7. Suggested Range Layout

For a suggested range layout to fire the M72, see figure 28.

Hour	Method of instruction	Scope of instruction	Training area	Suggested training aids
1st	Lecture, conference, and demonstration.	Introduction covering nomenclature, characteristics, capabilities, functioning, preparatory marksmanship, and safety precautions.	Classroom or field training area.	1 expended M72 launcher with cable. 1 dummy or mockup of rocket. 1 chart (diagram) of M72 sights. 1 chart (diagram) of backblast.
2d	Supervised practical exercise. (At least one assistant instructor per four students.)	Practical work on placing the launcher into operation, taking launcher out of action, immediate action, and recocking and assuming correct positions.	Field training area.	At least one expended launcher (with cable) per two students.
3d	Supervised practical exercise. (At least one assistant instructor per four students.)	Practical work in aiming, trigger squeeze (and recocking), range and speed estimation, and tracking moving targets.	Field training area.	1 expended launcher (with cable) per two students. 1 vehicle (to serve as moving target). 6 panels to set out for range estimate exercises, 100–325 meters.
4th	Supervised practical exercise. (One safety NCO per student.) Note 1.	Familiarization firing with the M72.	Firing range (modified 3.5-inch rocket range). Note 2.	2 66-mm HEAT rockets, M72, per student. Note 3.

Notes: 1. When firing, the safety NCO should be in position where he can influence the students' movements at all times.
2. 3.5 range must have following modifications for firing M72:
   a. Range must be cleared for firing HEAT ammunition.
   b. Range fan and safety zones must be increased to accommodate increased range of M72 rocket.
   c. Students should be placed on every other firing point when firing, in order to insure safety.
   d. No cross range firing should be allowed.
3. The first round should be fired at range of 150 meters.

Figure 27. Suggested training course, 4 hours.

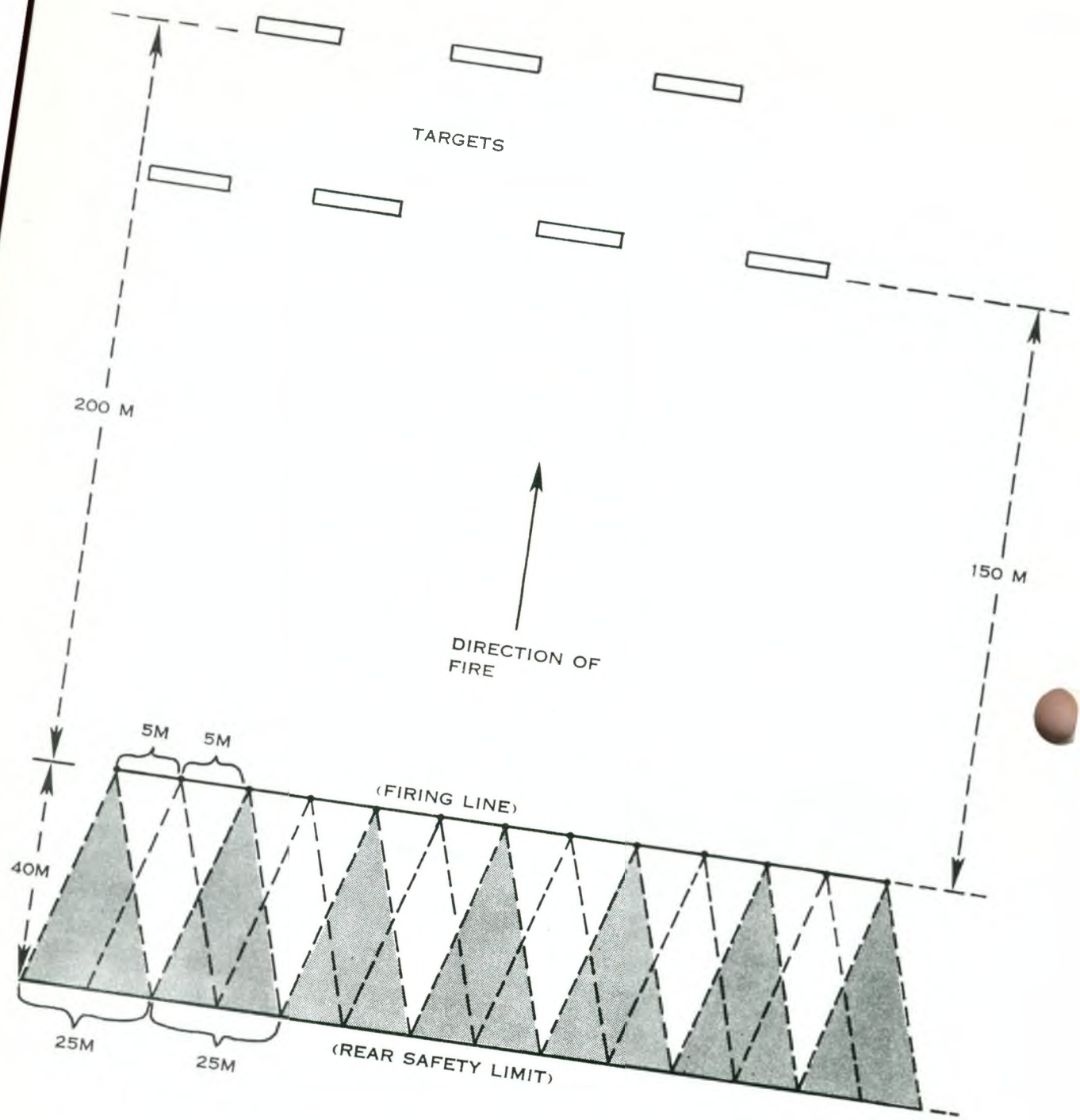


Figure 28. Suggested range layout.

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NG: State AG (3); units—same as active Army except allowance is one copy to each unit.
USAR: Units—same as active Army except allowance is one copy to each unit.
For explanation of abbreviations used, see AR 320-50.

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